CLAIMS

What is claimed is:

1. In a Home Agent, a method for providing Mobile IP mobile router functionality, the method comprising:

receiving a registration request packet, the registration request packet including a care-of address for the mobile router;

identifying one or more networks associated with the mobile router;

updating a routing table to associate the identified networks with the care-of address; and

updating a mobility binding table to include the care-of address for the mobile router.

2. The method as recited in claim 1, wherein identifying one or more networks comprises:

identifying the one or more networks associated with the mobile router from a mapping table associating the mobile router with the networks.

3. The method as recited in claim 1, wherein identifying one or more networks

comprises:

identifying the networks associated with the mobile router from the registration request packet.

4.   The method as recited in claim 3, wherein the registration request packet includes an extension specifying the networks linked to the mobile router and a status associated with each network, wherein identifying the networks associated with the mobile router from the registration request packet comprises:

ascertaining each network specified in the extension that has a status indicating that the network is in an active state.

5.   The method as recited in claim 1, wherein the care-of address is an IP address of a Foreign Agent.

6.   The method as recited in claim 1, wherein the care-of address is a collocated care-of address.

7.   The method as recited in claim 1, wherein the registration request packet includes an extension specifying at least one network linked to and associated with a mobile router.

8.   The method as recited in claim 7, where each network specified in the extension is associated with a network status.

9.   The method as recited in claim 8, wherein the network status is in a first state when the network is up, and is otherwise in a second state.

10.   A computer-readable medium storing thereon computer-readable instructions for providing Mobile IP mobile router functionality in a Home Agent, comprising:

instructions for receiving a registration request packet, the registration request packet including a care-of address for the mobile router;

instructions for identifying one or more networks associated with the mobile router;

instructions for updating a routing table to associate the identified networks with the care-of address; and

instructions for updating a mobility binding table to include the care-of address for the mobile router.

11.   The computer-readable medium as recited in claim 10, wherein the instructions for identifying one or more networks comprises:

instructions for identifying the one or more networks associated with the mobile router from a mapping table associating the mobile router with the networks.

12. The computer-readable medium as recited in claim 10, wherein the instructions for identifying one or more networks comprises:

instructions for identifying the networks associated with the mobile router from the registration request packet.

13. The computer-readable medium as recited in claim 12, wherein the registration request packet includes an extension specifying the networks linked to the mobile router and a status associated with each network, wherein the instructions for identifying the networks associated with the mobile router from the registration request packet comprises:

instructions for ascertaining each network specified in the extension that has a status indicating that the network is in an active state.

14. The computer-readable medium as recited in claim 10, wherein the care-of address is an IP address of a Foreign Agent.

15. The computer-readable medium as recited in claim 10, wherein the care-of address is a collocated care-of address.

16.   The computer-readable medium as recited in claim 10, wherein the registration request packet includes an extension specifying at least one network linked to and associated with a mobile router.

17.   The computer-readable medium as recited in claim 16, where each network specified in the extension is associated with a network status.

18.   The computer-readable medium as recited in claim 17, wherein the network status is in a first state when the network is up, and is otherwise in a second state.

19.   A Home Agent adapted for providing Mobile IP mobile router functionality, comprising:

a processor; and

a memory, at least one of the processor and the memory being adapted for:

receiving a registration request packet, the registration request packet including a care-of address for the mobile router;

identifying one or more networks associated with the mobile router;

updating a routing table to associate the identified networks with the care-

of address; and

updating a mobility binding table to include the care-of address for the

mobile router.

20.   The Home Agent as recited in claim 19, wherein identifying one or more networks
comprises:

identifying the one or more networks associated with the mobile router from a

mapping table associating the mobile router with the networks.

21.   The Home Agent as recited in claim 19, wherein identifying one or more networks
comprises:

identifying the networks associated with the mobile router from the registration

request packet.

22.   The Home Agent as recited in claim 21, wherein the registration request packet

includes an extension specifying the networks linked to the mobile router and a status

associated with each network, wherein identifying the networks associated with the mobile

router from the registration request packet comprises:

ascertaining each network specified in the extension that has a status indicating

that the network is in an active state.

23.   The Home Agent as recited in claim 19, wherein the care-of address is an IP address of a Foreign Agent.

24.   The Home Agent as recited in claim 19, wherein the care-of address is a collocated care-of address.

25.   The Home Agent as recited in claim 19, wherein the registration request packet includes an extension specifying at least one network linked to and associated with a mobile router.

26.   The Home Agent as recited in claim 25, where each network specified in the extension is associated with a network status.

27.   The Home Agent as recited in claim 26, wherein the network status is in a first state when the network is up, and is otherwise in a second state.

28.   A Home Agent adapted for providing Mobile IP mobile router functionality, comprising:

means for receiving a registration request packet, the registration request packet including a care-of address for the mobile router;

means for identifying one or more networks associated with the mobile router;

means for updating a routing table to associate the identified networks with the care-of address; and

means for updating a mobility binding table to include the care-of address for the mobile router.

29.   The Home Agent as recited in claim 28, wherein the means for identifying one or more networks comprises:

means for identifying the one or more networks associated with the mobile router from a mapping table associating the mobile router with the networks.

30.   The Home Agent as recited in claim 28, wherein the means for identifying one or more networks comprises:

means for identifying the networks associated with the mobile router from the registration request packet.

31.   The Home Agent as recited in claim 30, wherein the registration request packet includes an extension specifying the networks linked to the mobile router and a status associated with each network, wherein the means for identifying the networks associated with the mobile router from the registration request packet comprises:

        means for ascertaining each network specified in the extension that has a status indicating that the network is in an active state.

32.   The Home Agent as recited in claim 28, wherein the care-of address is an IP address of a Foreign Agent.

33.   The Home Agent as recited in claim 28, wherein the care-of address is a collocated care-of address.

34.   The Home Agent as recited in claim 28, wherein the registration request packet includes an extension specifying at least one network linked to and associated with a mobile router.

35.   The Home Agent as recited in claim 34, where each network specified in the extension is associated with a network status.

36.   The Home Agent as recited in claim 35, wherein the network status is in a first state when the network is up, and is otherwise in a second state.

37.   In a Foreign Agent supporting Mobile IP a method for use with a mobile router which registers with a Home Agent via the Foreign Agent, comprising:

receiving a registration request packet including an extension specifying one or more networks linked to and associated with the mobile router;

identifying the one or more networks linked to and associated with the mobile router from the registration request packet; and

updating a table to include at least one entry for the one or more networks that are linked to and associated with the mobile router such that the mobile router is associated with the one or more networks.

38.   The method as recited in claim 37, wherein the one or more networks are each designated by an IP address.

39.   The method as recited in claim 37, wherein the mobile router is designated by an IP address.

40.   The method as recited in claim 37, wherein the table is a visitor table.

41.   A Foreign Agent supporting Mobile IP a method for use with a mobile router which registers with a Home Agent via the Foreign Agent, comprising:

    means for receiving a registration request packet including an extension specifying one or more networks linked to and associated with the mobile router;

    means for identifying the one or more networks linked to and associated with the mobile router from the registration request packet; and

    means for updating a table to include at least one entry for the one or more networks that are linked to and associated with the mobile router such that the mobile router is associated with the one or more networks.

42.   The Foreign Agent as recited in claim 41, wherein the one or more networks are each designated by an IP address.

43.   The Foreign Agent as recited in claim 41, wherein the mobile router is designated by an IP address.

44.   The Foreign Agent as recited in claim 41, wherein the table is a visitor table.

45.   A Foreign Agent supporting Mobile IP a method for use with a mobile router which registers with a Home Agent via the Foreign Agent, comprising:

a processor; and

a memory, at least one of the processor and the memory being adapted for:

receiving a registration request packet including an extension specifying one or more networks linked to and associated with the mobile router;

identifying the one or more networks linked to and associated with the mobile router from the registration request packet; and

updating a table to include at least one entry for the one or more networks that are linked to and associated with the mobile router such that the mobile router is associated with the one or more networks.

46.   The Foreign Agent as recited in claim 45, wherein the one or more networks are each designated by an IP address.

47.   The Foreign Agent as recited in claim 45, wherein the mobile router is designated by an IP address.

48.   The Foreign Agent as recited in claim 45, wherein the table is a visitor table.

49.   A computer-readable medium storing thereon computer-readable instructions for performing a method for use with a mobile router which registers with a Home Agent via a Foreign Agent supporting Mobile IP, comprising:

instructions for receiving a registration request packet including an extension specifying one or more networks linked to and associated with the mobile router;

instructions for identifying the one or more networks linked to and associated with the mobile router from the registration request packet; and

instructions for updating a table to include at least one entry for the one or more networks that are linked to and associated with the mobile router such that the mobile router is associated with the one or more networks.

50.   The computer-readable medium as recited in claim 49, wherein the one or more networks are each designated by an IP address.

51.   The computer-readable medium as recited in claim 49, wherein the mobile router is designated by an IP address.

52.   The computer-readable medium as recited in claim 49, wherein the table is a visitor

table.

53.   A method for providing Mobile IP mobile router functionality in a Home Agent, the method comprising:

receiving a registration request, the registration request including a care-of address associated with a mobile router and an extension specifying at least one network linked to the mobile router;

identifying one or more networks associated with the mobile router from the extension;

updating a routing table to associate the identified networks with the care-of address; and

updating a mobility binding table to associate the care-of address with the mobile router.

54.   The method as recited in claim 53, further comprising:

updating a visitor table at a Foreign Agent with entries for selected networks that are specified in the extension such that the selected networks are associated with the mobile router.

55.   The method as recited in claim 53, wherein the extension further includes a status

for each network associated with the mobile router, and wherein identifying one or more networks comprises:

ascertaining each network specified in the extension that has a status indicating that the network is in an active state.

56.   A computer-readable medium storing thereon computer-readable instructions for providing Mobile IP mobile router functionality in a Home Agent, comprising:

instructions for receiving a registration request, the registration request including a care-of address associated with a mobile router and an extension specifying at least one network linked to the mobile router;

instructions for identifying one or more networks associated with the mobile router from the extension;

instructions for updating a routing table to associate the identified networks with the care-of address; and

instructions for updating a mobility binding table to associate the care-of address with the mobile router.

57.   The computer-readable medium as recited in claim 56, further comprising:

instructions for updating a visitor table at a Foreign Agent with entries for selected networks that are specified in the extension such that the selected networks are associated

with the mobile router.

58.   The computer-readable medium as recited in claim 56, wherein the extension

further includes a status for each network associated with the mobile router, and wherein

the instructions for identifying one or more networks comprises:

instructions for ascertaining each network specified in the extension that has a

status indicating that the network is in an active state.

59.   A Home Agent adapted for providing Mobile IP mobile router functionality in a

Home Agent, comprising:

a processor; and

a memory, at least one of the processor and the memory being adapted for:

receiving a registration request, the registration request including a care-of

address associated with a mobile router and an extension specifying at least one

network linked to the mobile router;

identifying one or more networks associated with the mobile router from

the extension;

updating a routing table to associate the identified networks with the care-

of address; and

updating a mobility binding table to associate the care-of address with the

mobile router.

60.   The Home Agent as recited in claim 59, wherein at least one of the processor and the memory are further adapted for:

updating a visitor table at a Foreign Agent with entries for selected networks that are specified in the extension such that the selected networks are associated with the mobile router.

61.   The Home Agent as recited in claim 59, wherein the extension further includes a status for each network associated with the mobile router, and wherein identifying one or more networks comprises:

ascertaining each network specified in the extension that has a status indicating that the network is in an active state.

62.   A Home Agent adapted for providing Mobile IP mobile router functionality in a Home Agent, comprising:

means for receiving a registration request, the registration request including a care-of address associated with a mobile router and an extension specifying at least one network linked to the mobile router;

means for identifying one or more networks associated with the mobile router from the extension;

means for updating a routing table to associate the identified networks with the care-of address; and

means for updating a mobility binding table to associate the care-of address with the mobile router.

63.   The Home Agent as recited in claim 62, further comprising:

means for updating a visitor table at a Foreign Agent with entries for selected networks that are specified in the extension such that the selected networks are associated with the mobile router.

64.   The Home Agent as recited in claim 62, wherein the extension further includes a status for each network associated with the mobile router, and wherein the means for identifying one or more networks comprises:

means for ascertaining each network specified in the extension that has a status indicating that the network is in an active state.

65.   A method for providing Mobile IP mobile router functionality, the method comprising:

receiving a registration request packet including a care-of address for the mobile router;

updating a mobility binding table to include the care-of address for the mobile router;

exchanging routing information between a Home Agent and a mobile router such that the Home Agent receives information identifying one or more networks coupled to the mobile router; and

updating at least one routing table such that the one or more identified networks coupled to the mobile router are associated with the care-of address.

66.   The method as recited in claim 65, further comprising:

updating a visitor table at a Foreign Agent with an entry for the identified networks such that the mobile router is associated with the identified networks.

67.   The method as recited in claim 66, wherein updating a visitor table is performed when the care-of address is an IP address of a Foreign Agent.

68.   The method as recited in claim 65, wherein updating at least one routing table

comprises:

storing at least a portion of the exchanged routing information in a routing table associated with the Home Agent.

69.   The method as recited in claim 65, wherein updating at least one routing table comprises:

storing at least a portion of the exchanged routing information in a routing table associated with the mobile router.

70.   The method as recited in claim 65, wherein exchanging routing information is performed via an IP routing protocol.

71.   A computer-readable medium storing thereon computer-readable instructions for providing Mobile IP mobile router functionality, comprising:

instructions for receiving a registration request packet including a care-of address for the mobile router;

instructions for updating a mobility binding table to include the care-of address for the mobile router;

instructions for exchanging routing information between a Home Agent and a mobile router such that the Home Agent receives information identifying one or more

networks coupled to the mobile router; and

instructions for updating at least one routing table such that the one or more identified networks coupled to the mobile router are associated with the care-of address.

72. The computer-readable medium as recited in claim 71, further comprising:

instructions for updating a visitor table at a Foreign Agent with an entry for the identified networks such that the mobile router is associated with the identified networks.

73. The computer-readable medium as recited in claim 72, wherein updating a visitor table is performed when the care-of address is an IP address of a Foreign Agent.

74. The computer-readable medium as recited in claim 71, wherein the instructions for updating at least one routing table comprises:

instructions for storing at least a portion of the exchanged routing information in a routing table associated with the Home Agent.

75. The computer-readable medium as recited in claim 71, wherein the instructions for updating at least one routing table comprises:

instructions for storing at least a portion of the exchanged routing information in a

routing table associated with the mobile router.

76. The computer-readable medium as recited in claim 71, wherein exchanging routing information is performed via an IP routing protocol.

77. A Home Agent adapted for providing Mobile IP mobile router functionality, comprising:

a processor; and

a memory, at least one of the processor and the memory being adapted for:

receiving a registration request packet including a care-of address for the mobile router;

updating a mobility binding table to include the care-of address for the mobile router;

exchanging routing information between a Home Agent and a mobile router such that the Home Agent receives information identifying one or more networks coupled to the mobile router; and

updating at least one routing table such that the one or more identified networks coupled to the mobile router are associated with the care-of address.

78.   The Home Agent as recited in claim 77, wherein at least one of the processor and the memory are further adapted for:

updating a visitor table at a Foreign Agent with an entry for the identified networks such that the mobile router is associated with the identified networks.

79.   The Home Agent as recited in claim 78, wherein updating a visitor table is performed when the care-of address is an IP address of a Foreign Agent.

80.   The Home Agent as recited in claim 77, wherein updating at least one routing table comprises:

storing at least a portion of the exchanged routing information in a routing table associated with the Home Agent.

81.   The Home Agent as recited in claim 77, wherein updating at least one routing table comprises:

storing at least a portion of the exchanged routing information in a routing table associated with the mobile router.

82.   The Home Agent as recited in claim 77, wherein exchanging routing information is performed via an IP routing protocol.

83.   A Home Agent adapted for providing Mobile IP mobile router functionality, comprising:

        means for receiving a registration request packet including a care-of address for the mobile router;

        means for updating a mobility binding table to include the care-of address for the mobile router;

        means for exchanging routing information between a Home Agent and a mobile router such that the Home Agent receives information identifying one or more networks coupled to the mobile router; and

        means for updating at least one routing table such that the one or more identified networks coupled to the mobile router are associated with the care-of address.

84.   The Home Agent as recited in claim 83, further comprising:

        means for updating a visitor table at a Foreign Agent with an entry for the identified networks such that the mobile router is associated with the identified networks.

85.   The Home Agent as recited in claim 84, wherein updating a visitor table is performed when the care-of address is an IP address of a Foreign Agent.

86.   The Home Agent as recited in claim 83, wherein the means for updating at least one routing table comprises:

means for storing at least a portion of the exchanged routing information in a routing table associated with the Home Agent.

87.   The Home Agent as recited in claim 83, wherein the means for updating at least one routing table comprises:

means for storing at least a portion of the exchanged routing information in a routing table associated with the mobile router.

88.   The Home Agent as recited in claim 83, wherein exchanging routing information is performed via an IP routing protocol.